

What is claimed is:

1. A beam splitter array including:

a first beam splitter that outputs a first beam of optical radiation having a power spectral density comprising a substantial portion of a white light spectrum from a first output port, and that outputs a second beam of optical radiation having a power spectral density comprising a substantial portion of a first non-white light spectrum and a substantial portion of a second non-white light spectrum from a second output port, from an input beam received at a first angle of incidence;

a second beam splitter, arranged to receive the second beam at a second angle of incidence, that reflects a substantial portion of the second beam having a power spectral density comprising the first non-white light spectrum, and that transmits a substantial portion of the second beam having a power spectral density comprising the second non-white light spectrum; and

a reflector arranged to reflect a substantial portion of the beam transmitted by the second beam splitter.

2. The beam splitter array of claim 1, wherein the first output port comprises a surface of the first beam splitter through which light is transmitted, and the second output port comprises a surface of the first beam splitter from which light is reflected.

3. The beam splitter array of claim 1, wherein the first output port comprises a surface of the first beam splitter from which light is reflected, and the second output port comprises a surface of the first beam splitter through which light is transmitted.

4. The beam splitter array of claim 1, wherein the second beam splitter is further arranged to reflect the first beam in a first direction, and the reflector is further arranged to reflect the second beam in a second direction that is within 20° of the first direction.

5. The beam splitter array of claim 1, wherein the first beam splitter has an optical transmittance spectrum that is larger than 0.5 over at least 50% of the white light spectrum that includes wavelengths between about 400 nanometers and about 670 nanometers, and an optical reflectance spectrum that is larger than 0.5 over the first non-white light spectrum that does not overlap the white light spectrum and is larger than 0.5 over the second non-white light spectrum that does not overlap the white light spectrum or the first non-white light spectrum.

6. The beam splitter array of claim 5, wherein the second beam splitter has an optical reflectance spectrum that is larger than 0.5 over the first non-white light spectrum, and an optical transmittance spectrum that is larger than 0.5 over the second non-white light spectrum.

7. The beam splitter array of claim 5, wherein the reflector has an optical reflectance spectrum that is larger than 0.5 over the second non-white light spectrum.

8. The beam splitter array of claim 1, wherein the first non-white light spectrum comprises a near-infrared spectrum.

9. The beam splitter array of claim 1, wherein the first non-white light spectrum comprises a narrowband visible spectrum.

10. The beam splitter array of claim 1, wherein the first non-white light spectrum includes wavelengths between about 680 nanometers and about 720 nanometers.

11. The beam splitter array of claim 1, wherein the second non-white light spectrum includes wavelengths between about 760 nanometers and about 800 nanometers.

12. The beam splitter array of claim 1, further comprising:  
a first filter that has a bandpass transmittance spectrum centered at about 700 nm arranged to receive the first beam; and  
a second filter that has a bandpass transmittance spectrum centered at about 780 nm arranged to receive the second beam.

13. A system comprising:  
the beam splitter array of claim 1;  
a first filter that has a bandpass transmittance spectrum centered at about 700 nm arranged to receive a beam of optical radiation reflected from the second beam splitter at the second angle of incidence;  
a second filter that has a bandpass transmittance spectrum centered at about 780 nm arranged to receive a beam of optical radiation reflected from the reflector;  
a first waveguide arranged to deliver optical radiation radiated from a sample to the first beam splitter at the first angle of incidence;  
a first detector arranged to receive a beam of optical radiation output from the first beam splitter at the first angle of incidence; and  
a second detector arranged to receive a beam of optical radiation reflected from the second beam splitter and a beam of optical radiation reflected from the reflector.

14. The system of claim 13, wherein the first detector comprises a camera.

15. The system of claim 13, wherein the second detector comprises a single camera arranged to receive the beam of optical radiation reflected from the second beam splitter and the beam of optical radiation reflected from the reflector.

16. The system of claim 13, wherein the second detector comprises two cameras arranged to receive the beam of optical radiation reflected from the second beam splitter and the beam of optical radiation reflected from the reflector, respectively.

17. The system of claim 13, further comprising:  
a source of optical radiation that includes white light; and  
a second waveguide arranged to deliver the optical radiation produced by the source to the biological tissue.

18. The system of claim 13, wherein the source is filtered to reduce white light in the first non-white light spectrum and the second non-white light spectrum.

19. The system of claim 13, wherein the source comprises a broadband white light source combined with a narrowband non-white light source.

20. The system of claim 19, wherein the broadband white light source comprises a xenon lamp.

21. The system of claim 19, wherein the narrowband non-white light source comprises a laser diode.

22. A method comprising:  
illuminating a sample with optical radiation from a source of optical radiation that includes white light;  
collecting optical radiation from the sample;  
delivering the collected optical radiation to a beam splitter array;  
detecting a first image of optical radiation with a power spectral density that includes a white light spectrum from the beam splitter array;

detecting a second image of optical radiation with a power spectral density that includes a first non-white light spectrum from the beam splitter array; and

detecting a third image of optical radiation with a power spectral density that includes a second non-white light spectrum from the beam splitter array.

23. The method of claim 22, wherein the beam splitter array comprises:

a first beam splitter that outputs a first beam of optical radiation having a power spectral density comprising a substantial portion of a white light spectrum from a first output port, and that outputs a second beam of optical radiation having a power spectral density comprising a substantial portion of a first non-white light spectrum and a substantial portion of a second non-white light spectrum from a second output port, from an input beam received at a first angle of incidence;

a second beam splitter, arranged to receive the second beam at a second angle of incidence, that reflects a substantial portion of the second beam having a power spectral density comprising the first non-white light spectrum, and that transmits a substantial portion of the second beam having a power spectral density comprising the second non-white light spectrum; and

a reflector arranged to reflect a substantial portion of the beam transmitted by the second beam splitter.

24. The method of claim 23, wherein the first output port comprises a surface of the first beam splitter through which light is transmitted, and the second output port comprises a surface of the first beam splitter from which light is reflected.

25. The method of claim 23 wherein the first output port comprises a surface of the first beam splitter from which light is reflected, and the second output port comprises a surface of the first beam splitter through which light is transmitted.

26. The method of claim 22, wherein the first, second, and third images are detected simultaneously.

27. The method of claim 22, wherein the first, second, and third images are recorded.

28. The method of claim 22, further comprising combining two or more of the first, second, and third images using a mathematical function.